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Opinion/Editorial

New Guideline for the Acquisition and Preparation of EBUS-TBNA and TBNA Specimens in Patients with Known or Suspected Lung Cancer

Conventional transbronchial needle aspiration (TBNA) is a procedure that has been used by bronchoscopists for many decades. Image guidance has enhanced the accuracy of TBNA; specifically endobronchial ultrasound guided TBNA (EBUS-TBNA). EBUS-TBNA is now considered the first choice for diagnosis and staging of patients with (suspected) lung cancer in lesions accessible by EBUS (1, 2). Not only is EBUS invaluable for invasive mediastinal staging, specimens obtained from this minimally invasive needle biopsy technique can also be used for molecular analysis which becomes important in the era of personalized cancer therapy (3). The mission of the World Association for Bronchology and Interventional Pulmonology (WABIP) is to promote the art and science of bronchology and interventional pulmonology. The Executive Board of the WABIP formed the WABIP Task Force of Specimen Guidelines to specifically address specimen handling of materials obtained by conventional TBNA and EBUS-TBNA. I would like to congratulate the Task Force on the publication of their guidelines in the journal Respiration for acquisition and preparation of TBNA specimens for the diagnosis and molecular testing of patient with known or suspected lung cancer (4).

The Task Force addressed four important patient investigation/intervention comparison outcome questions in patients with known or suspected lung cancer undergoing TBNA or EBUS-TBNA; 1) Does acquisition techniques affect the quantity and quality of the specimen for diagnosis? 2) Do specimen preparation techniques affect the quantity and quality of the specimen for diagnosis? 3) Does rapid on-site cytology examination (ROSE) affect the quantity, quality and yield of the specimens for diagnosis? 4) Do acquisition techniques, specimen preparation techniques or ROSE affect the ability to perform molecular testing (i.e. EGFR/ALK but also other markers with predictive/prognostic information, such as KRAS, ERCC1, RRM1, TS, PIK3CA and MET)?

Based on systematic quality metric assessment and grading of the quality of evidence for clinical guidelines, the Task Force came up with very informative results, which will help both starting and more experienced bronchoscopists. First of all, the number of needle aspirations with both conventional TBNA and EBUS-TBNA was found to impact the diagnostic yield, with at least 3 passes needed for optimal performance. Neither needle size (21 gauge vs 22 gauge) nor the use of miniforceps, the use of suction or the type of sedation/anesthesia was found to improve the diagnostic yield. ROSE does not increase the diagnostic yield and molecular analysis can be performed on the majority of cytological samples obtained by conventional TBNA and EBUS-TBNA but largely depends on the absolute number of tumor cells and percentage of tumor cells present in the material. Lastly, there does not appear to be a superior method for specimen preparation. I strongly encourage everyone to review the entire guideline thoroughly, since it provides detailed results of the systematic review.

The guideline is consistent with my experience in both TBNA and EBUS-TBNA. Every bronchoscopist should continue to improve their techniques in acquisition of specimens, since no amount of skill and interest of the cytopathologist can make up for inadequate sampling. Similarly, no amount of bronchoscopic technique can make up for a badly prepared specimen. Adequate specimen acquisition and handling are of critical importance for accurate staging and diagnosis of lung cancer.

Editor in Chief

Kazuhiro Yasufuku

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Technology Corner

Technology corner: EBUS-TBNA needles for diagnosis, staging and molecular testing in lung cancer

Introduction: The majority of patients with lung cancer are diagnosed by procedures offering small volume biopsies or cytology specimens, such as CT-guided FNA, thoracentesis, bronchoscopic biopsy or TBNA. EBUS-guided TBNA is now recommended as the first best choice for staging the mediastinum in patients with lung cancer. In addition, the majority of patients with lung cancer are still diagnosed in advanced stages, when molecular testing and biomarker-driven therapy become relevant. Thus the quality and quantity of EBUS-TBNA acquired specimens is increasingly relevant for diagnosis, staging and individualized treatment. This clinical impact of EBUS-TBNA procedures was promptly recognized by industry and manufacturers increasingly developed a variety of EBUS needles, which may vary significantly in regards to sampling techniques as well as the quantity, type (histology or cytology) and quality of the sampled specimen. An understanding of the commonly used dedicated EBUS-TBNA needles features is thus relevant for the bronchoscopist involved in lung cancer diagnosis and management.

Background: Commonly used EBUS-TBNA needle systems mainly vary in handle, actual needle design (eg. core trap, standard), size (i.e. needle gauge), locking mechanism (eg. adapter valves, luer-lock) and material (eg. nitinol) (Table). The core trap models were designed to allow acquisition of a histology sample in addition to the aspiration material (Figure). To date, however, there is no data to prove that these core trap EBUS needle systems offer specimens with more cellularity or better purity than the conventional needles. EBUS needles are echogenic, have an adjustable sheath length and a handle designed for stability and control of the needle during the TBNA procedures. However, there are no published surveys assessing the operators' comfort level or user-friendly features for the various available systems. The 25 gauge (G) needles (eg. EchoTipProCore, Cook Medical) are more flexible than the 22 G needles, flexibility which allows to deflect the bronchoscope to a greater degree than with the larger needles. This feature allows sampling of various regions of the lymph node (i.e. "stroking fan" technique), once the node is punctured, by simple flexion/extension of the bronchoscope lever (Figure). This technique allows cutting into previously non- traumatized lymph node tissues, potentially increasing the quantity and quality of the aspirated material. It remains to be determined whether this technical aspect of the EBUS-TBNA procedure offers any advantages over the conventional approach. The higher flexibility, however, makes penetration of the cartilaginous airway wall more difficult than with standard 22 or 21 G needles (eg. ViziShot Aspiration needle, Olympus) and more force is required when using this needle, which could be riskier especially when sampling small size lymph nodes (Figure). Some EBUS needle designs (eg Medi-Globe GmbH) are comprised of Nitinol, which may prevent the permanent needle bend that occurs during advancement through curved EBUS scope positions. To date, there are no comparison studies among the needles designed by different manufacturers. Familiarity, availability and costs continue to impact operators' selection of a particular EBUS needle.

Clinical applications: The needles with a lateral bevel design (eg. EchoTipProCore, Cook Medical), while approved for clinical use, have not yet been systematically studied for EBUS-TBNA applications. In addition, there are no comparisons between the commercially available 22 and 25 G EBUS needles. Data from EUS –FNA, however, suggests that the diagnostic rate offered by the 25 G ProCore needle is similar to the standard 22 G needle but with fewer passes needed to achieve adequacy when the 22 beveled needle was used (1). Data from FNAs of the thyroid and breast, however, suggest that for hypervascular and densely fibrotic nodes, smaller needles (25 G) may perform better (2). Comparison studies are thus needed for the 22 and 25 G EBUS-TBNA not only to assess the diagnostic yield but also the quality and quantity for molecular testing and immunohistochemistry relevant to immunotherapy. There is data, however, showing that there is no difference between the 21 and 22 G Olympus needles in regards to the diagnostic rate for lung cancer detection in the mediastinal lymph nodes (3, 4) although, EBUS-TBNA in conjunction with rapid onsite cytologic evaluation and a 21G needle is associated with fewer needle passes compared with a 22G needle (4). In addition, the preserved histological structure of the samples obtained by the 21G needle may be useful for the diagnosis of mediastinal and hilar adenopathy of unknown etiology, which may be a challenge with the 22G needle (3). Architecture may be even better preserved by the soon to be available 19 gauge EBUS-TBNA needles. Specimens retrieved by the currently available EBUS-TBNA needles (21 and 22 G Olympus) were found to be adequate for EGFR, KRAS, ALK and BRAF testing (5, 6). The number of targetable genetic alterations is constantly growing and thus next generation sequencing panels are increasingly being used for mutation analysis. The specimen requirements for a 50-gene panel, for instance, comprises of at least 10 ng of genomic DNA, which translates into a need for at least 5,000 cells (1 cell has 1- 4 picograms of DNA; a ~50% loss during preparation is assumed). More comprehensive panels (400 genes), require ~60 ng of DNA. This means that for the time being, the specimen requirements for comprehensive molecular analysis are likely to increase.

Conclusions: Given the different physical properties, design, size and maneuverability, the available EBUS-TBNA needles are likely not equal in terms of acquiring adequate material for diagnosis and molecular analysis in lung cancer. A personalized approach may be warranted depending on the clinical question and envisioned downstream testing and treatment. A fair comparison between different needle systems in the same patient population is impossible at this time as there is no data. Pending future research, we should however, use judgment and apply the published data in our approach to EBUS-TBNA in patients with lung cancer. A closer collaboration between parties involved (i.e. manufacturers, engineers, and bronchoscopists) may be helpful in designing EBUS-TBNA needles that fulfill the characteristics required for a specific patient.

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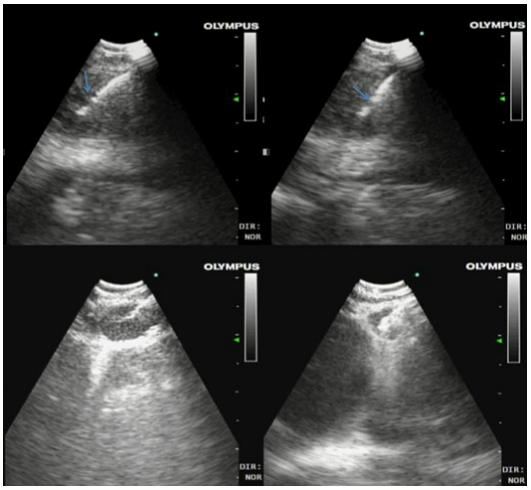

Top panel: Two sequences from a video recorded during EBUS-TBNA from a large lymph node. The 25gauge needle (EchoTipProCore, Cook Medical) was used. The lateral bevel is noted as a break in the hyperechoic line (arrow). The "stroking fan" technique was used, in which the needle direction can be changed inside the node to sample different areas of the node. This is possible, given the flexibility of this needle.

Bottom panel: Images of two subcentimeter lymph nodes (11L, bottom left and 4L, bottom right) during EBUS-TBNA using the 22 gauge needle (VisiShot needle, Olympus). The stiffness of this needle design allows easier penetration of the airway wall and better control of the needle during the puncture of the node, especially when the nodes are small.

Table

Manufacturer	Dedicated EBUS Needle design	Needle gauge	Maximum needle extension	EBUS Scope compatibility*
Cook	Core trap	22 and 25	5 cm	Olympus, Pentax**
Olympus	Standard	22 and 21	4 cm	Olympus, Fuji
Medi-Globe	Standard	22	4 cm	Olympus, Pentax

* as reported by the manufacturer

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Introduction: Flexible bronchoscopic cryobiopsy is an emerging tool for diagnosis of interstitial lung disease (ILD). Traditionally, bronchoscopy with forceps biopsy has had a limited role for diagnosis of ILD (1). This is especially true for idiopathic ILDs. Historically, the most definitive option for pathologic diagnosis has been surgical lung biopsy (SLB). However, prior studies have associated SLB with a high morbidity and mortality, especially for patients with idiopathic pulmonary fibrosis. The lack of benefit from traditional bronchoscopy and the morbidity associated with SLB led many clinicians to forgo tissue diagnosis altogether. In the past 5 years numerous publications have shown the beneficial effect of peripheral lung cryobiopsy (3). The utility of flexible cryobiopsy for diagnosis of ILD has been recently demonstrated (4)

Indications: For evaluation of and surveillance for rejection post lung transplant, cryobiopsy provides larger and more diagnostic lung parenchyma specimens with low complication rate and shorter intervention time than traditional forceps biopsies (5). A pilot study revealed that cryobiopsy changed management in 80% of immunocompromised patients with diffuse pulmonary infiltrates (6). As noted above the diagnostic yield in diffuse parenchymal lung disease is around 80% and superior to transbronchial forceps biopsy (3, 4). It is also indicated for evaluation of small airway disease, lung nodules and masses. It is unclear if transbronchial cryobiopsy is equal to or superior than surgical lung biopsy as no head to head comparisons have been performed in large randomized trials.

Planning: A focused history and physical is done to assess for modifiable risk factors. Specifically the degree of hypoxemia, presence of pulmonary hypertension and use of anticoagulants or antiplatelet agents is assessed. High-resolution CT scans are reviewed to determine if infiltrates are in a location amenable to cryobiopsy. A complete blood count and basic metabolic panel are obtained to assess bleeding risk. Coagulation studies are not typically ordered unless there is a clinical indication. Patients are asked to discontinue all medications and supplements that may affect platelet function or coagulation for 1 week prior to the procedure. Patients are informed about the risks of pneumonia, pneumothorax or serious bleeding and a rare chance of death.

Sampling: All bronchoscopies are done in a dedicated procedure suite using fluoroscopy (Figure). We use the 1.9 mm ERBE cryoprobe with CO2 gas. An ex vivo test freeze is performed using room temperature saline to ensure formation of an 8 mm ice ball around the probe, typically this occurs after a 4 second freeze, however, different and/or older probes may have a second or 2 difference to achieve an 8mm ice ball. Patients are moderately sedated with midazolam and fentanyl. We use an 8.5 mm Smiths Medical Bivona Aire-Cuf wire reinforced endotracheal tube, loaded onto a 6.2 mm external diameter bronchoscope with a 2.8 mm working channel that has been sprayed with silicone. The wire spiral endotracheal tube is advanced orally via a bite block into the mid trachea and then secured with silk tape. Oxygen (FiO2 1.0) is supplied via an elbow connector/coupler that is attached to the endotracheal tube, but the cuff is not inflated. The bronchoscope is advanced into the desired segment; a reference image of the bronchoscope location is displayed on the second screen of the fluoroscopy unit (this allows for advancement of the bronchoscope under fluoroscopy, in case post biopsy bleeding is too severe for direct visualization). The cryoprobe is then advanced through the working channel (the tactile feedback from the cryoprobe is not as responsive as standard forceps and occasionally can be difficult to feel when maximal resistance is met) until resistance is met and then withdrawn 1.5 cm from the point of resistance, the cryoprobe pedal is then depressed for 4 seconds, the patient is asked if they have any chest pain, if they do then biopsy probe is allowed to thaw and an alternate site is chosen. If no chest pain is perceived then on the 5 second count the cryoprobe is pinched between the thumb and forefinger and with the heel of hand resting against the biopsy port; then using both hands the bronchoscope and cryoprobe are pulled out of patient en bloc it should be noted that an assistant needs to grip the ETT in order to prevent it from being dislodged. The probe is quickly introduced into a saline bath located next to the patient (Figure); the frozen biopsy is manipulated in the bath between the thumb and forefinger to free the biopsy. Once the biopsy is free, the cryoprobe is pulled from the working channel and the bronchoscope is quickly reintroduced to control bleeding (total of 10 seconds is spent out of the airway). The airway is cleared of blood and the scope is advanced until wedge position is obtained. If bleeding is severe then live fluoroscopy and the static fluoroscopic reference image are used to obtain wedge position. After approximately 3 minutes the bronchoscope is pulled back into a major airway being careful not to suction the clot free and then if no further bleeding is seen the next biopsy is obtained.

Quality control: The biopsies are quickly transferred from saline into formalin. Fluoroscopy is done to examine for pneumothorax. A routine chest x-ray is not done. Patients are instructed that they will have a low-grade temperature, sore throat and chest pain afterwards and that they will cough up minute amounts of blood for the next 1-2 days. Patients are observed in the recovery area for resolution of sedative

effects and to monitor for development of pneumothorax for 2 hours post biopsy then discharged. Patients are called in 24 hours to check for complications.

Tips:
Perform a test freeze as described above.
The endotracheal tube is used as a conduit to quickly get back into the airway after a biopsy is taken and if severe bleeding is encountered selective intubation of the non-bleeding mainstem bronchi can be done.
A Fogarty balloon or other blocking device (i.e. Arndt blocker) should be readily available if severe bleeding is encountered. Some operators prefer to have these devices already inserted in the airway prior to the biopsy.
Published evidence and our experience show a higher rate of pneumothorax when the 2.4 mm probe was used.
Operators must be skilled and equipped to control brisk bleeding in order to perform this procedure safely

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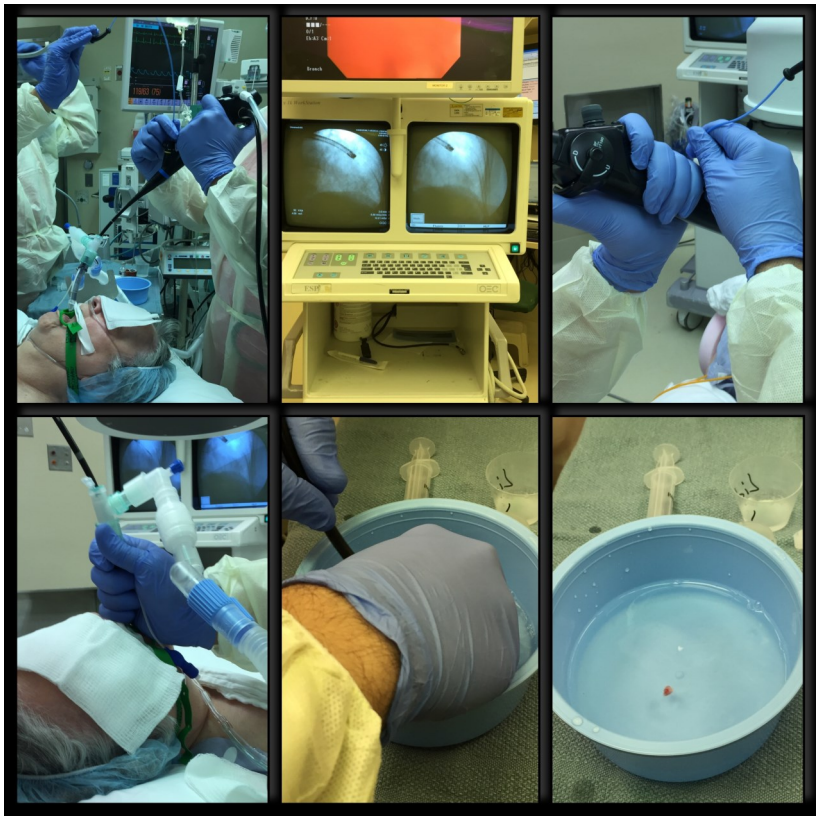

Top panel. LEFT: introduction of 1.9mm cryoprobe via wire spiral ETT, bite block and coupling adapter with saline filled blue bowl in background. MIDDLE: live fluoroscopy image showing scope in wedge position on left and with static reference image on right. RIGHT: Bronchoscope gripped in left hand, cryoprobe pinched with right hand and heel of right hand resting on biopsy port as both are pulled to take biopsy. Bottom panel. LEFT: assistant hold ETT as biopsy is taken to prevent tube from dislodging. MIDDLE: specimen is agitated with fingers in saline bath to quickly thaw it and remove from the probe. RIGHT: Large cryobiopsy floating in saline.

News of Humanitarian Activities

The WABIP applauds the unselfish work of humanitarian aid workers around the world, and most especially this past year all those who fought and continue to fight the spread of Ebola. Their work prompts us to recall a few definitions, provided here for our members around the globe.

Humanitarian actions are usually defined as a set of actions destined to help victims of natural and man-made disasters, armed conflict or individuals suffering from societal exclusion because of economic, ethnic, or social discrimination. Actions include assistance, protection, the development of long-term projects to assure education, sustenance, health and well-being, and advocacy in defense of human rights. These are performed in order to ease suffering and pain, guarantee basic subsistence, protect fundamental human rights, defend personal dignity, and slow destructive socio-economic processes in preparation for future natural or man-made disasters or conflicts. In addition to actions performed by local groups, volunteers, and faith-based organizations, many are performed by nonprofit national or international nongovernmental organizations (NGOs) that adhere to principles of non-engagement, independence, impartiality and neutrality.

The terms humanitarian action, humanitarian aid, and humanitarian assistance are often used interchangeably, but in reality, have different connotations. Humanitarian assistance, or emergency assistance, corresponds to an emergency response to catastrophic situations such as natural disasters (cyclones, floods, earthquakes, tsunamis, droughts), and social or political events (economic disaster, internal conflicts, civil war, population migrations and refugee-related issues) for which consequences such as epidemics, violence, or famine create suffering and danger. Immediate action to save lives and reduce suffering is usually given priority over future developmental aide. Humanitarian aid encompasses a larger construct, including, for example, prolonged interventions to secure the safety and well-being of populations, as well as refugees and internally displaced persons during the aftermath of a conflict or natural disaster. These actions are not limited to immediate assistance, and are destined to assure a long term presence that will reduce or prevent further economic and social degradation, as well as create a foundation for growth and development.

For an informative overview of the interplay between humanitarian actions, politics, and the significance of a life of dedicated service we enjoyed the film TRIAGE : Dr. James Orbinski's humanitarian dilemma (2008). The film describes the work of James Orbinski, past international president of Medecins Sans Frontieres/Doctors Without Borders, who accepted the Nobel Peace Prize for MSF in 1999.

Education and Training

***ITEM 1**:* Bronchoscopy Education Project activity in Moscow, Russia Federation

In October 2014, Dr. Henri Colt, with certified instructors Rosa Cordovilla from Spain, Nikos Koufos from Greece, accompanied by new World Bronchology Foundation President Enrique Cases, traveled to Moscow, Russia to help conduct a Bronchoscopy Education Project Leadership Awareness Program and Introduction to the Flexible Bronchoscopy Course. The programs were held at the P.A. Herzen Moscow Research Oncological Institute (Director, Professor Andrey Kaprin) ,organized and directed by Professor and Head of Endoscopy Victor V. Sokolov. The goals of these programs were to meet with a select group of leaders and bronchoscopy educators in order to share philosophies, learn more about how bronchoscopy is practiced in Russia and around the world, and to discuss the potential use of inanimate models, simulation scenarios, checklists, assessment tools, and patient case-based exercises in a multidimensional educational program. An exciting and productive plan was developed for future collaborations, and greater participation of our friends in the Russian Association for Bronchology and Interventional Pulmonology in WABIP activities.

Figure 1: Professor Victor V Sokolov (white coat, center) with team of leading educators from Moscow and WABIP instructors.

Figure 2: Professor Victor V. Sokolov with some members of his bronchology team, Dr. Colt, WABIP certified instructors Rosa Cordovilla (Spain) and Nikos Koufos (Greece), and Enrique Cases (Spain).

Item 2: WABIP Academy Still Image Library

Work has begun to develop the WABIP Academy Still Image Library under the leadership of Dr. Hervé Dutau of Marseille, France and his team of associate section editors: Fabien Maldonado (USA), Philip Astoul (France), and Bin Hwangbo (South Korea). **The WABIP Academy** is designed to assist practitioners and physicians in-training to achieve greater competency in all aspects of Bronchoscopy and Interventional Pulmonology, and to support the mission and vision of the World Association for Bronchology.

Vision and Goals: The Academy includes a variety of educational activities and assessment instruments designed to enhance knowledge and document commitment to advancing the art and science of Bronchology and Interventional Pulmonology. Contents will be organized into a standardized evidence and experience-based curriculum that provides a foundation of knowledge designed to grow as new topics and materials become available. Each WABIP Academy activity is led by a Section editor and team of Associate Section Editors who review materials, invite contributions of scientific content, and compose multiple-choice questions as part of an on-line assessment instrument that may be used for CME and EACME accreditation. The WABIP Still Image Library will include a collection of still images of airway and pleural abnormalities, a simple descriptive figure legend as needed, acknowledgment to the figure contributor, and, for assessment purposes, a series of “image quizzes “ for which readers will need to match the image to its appropriate description .

Figure 3: Screen shot of webcast page on the new WABIP Academy webpage at www.wabip.com

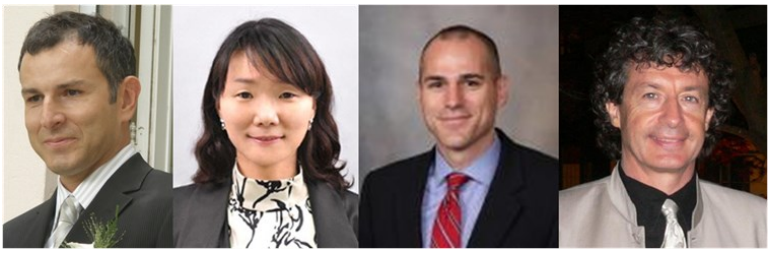

Figure 4: WABIP Image Library: Herve Dutau (Section Editor), with Associate Editors Bin Hwangbo, Fabien Maldonado, and Philip Astoul.

BOARD OF REGENTS NEWS

ITEM 1: The WABIP is pleased to present Dr. Zsolt Papai-Szekely, who is the new Vice-Chair of our growing organization. Dr. Papai will serve as Vice-Chair from 2014-2016. Zsolt graduated from Semmelweis Medical University in Budapest, Hungary in 1989. He is Board certified in Pulmonary Medicine and in Medical Oncology. After working as a staff physician and Assistant Professor of Medicine at the Korányi National Institute of Pulmonology, Dr. Pápai traveled widely in the United States and Europe to further his education. In 2003, he was named Head of the Department of Pulmonology and Thoracic Oncology at Székesfehérvár, making it rapidly one of the busiest interventional pulmonology referral centers in his country. Dr. Pápai's major clinical interests are in bronchoscopy and particularly in the diagnosis and treatment of lung cancer. He has a longstanding history of leadership, and was Chair of the Hungarian Association for Bronchology. Since 2010, he served as Secretary General of the Hungarian Respiratory Society. He also served as the International Regent for Hungary in the American College of Chest Physicians, and was elected chair of the International Council from 2009-2010, and was President of International Bronchoesophagological Society from 2010-2012. He has been an active member of the WABIP since many years, and was chosen to be the President of the highly successful 10th World Congress for Bronchology and Interventional Pulmonology held in Budapest in 2010.

Figure 1: Dr. Zsolt Papai, Vice-Chair WABIP 2014-2016

ITEM 2: The WABIP is pleased to announce that Dr. Hervé Dutau, of Marseille, France, has been named the Section Head for the WABIP Academy Image Library. Hervé is an accomplished interventional pulmonologist with a large experience in medical imaging and documentation. He is the current President of the European Association for Bronchology and Interventional Pulmonology, and has been an extremely active and productive member of the Groupe d'Endoscopie de Langue Francaise (GELF), and member of the WABIP Education committee. Dr. Dutau will be assisted by a dedicated team of associate editors to build the WABIP Academy Still Image Library. This collection of images will be available to WABIP members, and will become an important part of the WABIP's education and clinical care missions. Please do not hesitate to contact Michael Mendoza (mmendoza@wabip.com), the General Manager of the WABIP, if you have images that you would like to contribute to the WABIP Academy Still Image Library and thereby benefit bronchoscopists from around the world.

Figure 2: Dr Hervé Dutau, Marseille, France

BOARD OF REGENTS NEWS

ITEM 3: The WABIP welcomes the Assembly on Interventional Pulmonology of the South African Thoracic Society (SATS) or in short "Interventional Pulmonology South Africa" or "IPSA", into the WABIP family. The IPSA functions as an autonomous assembly within the SATS. Interventional pulmonology is still in its infancy in South Africa. In fact, there are currently less than 20 interventional pulmonologists in the country. Many of the major training centers have recently acquired new state-of-the-art endoscopy equipment, but a critical mass of skilled mentors and training programs is still lacking. The first general meeting was held in August 2013 at Stellenbosch University (Cape Town) where Dr. Coenie Koegelenberg was elected chairman of the IPSA. A first national interventional pulmonology course (with hands-on training) was held in April 2014 in Cape Town, and a second is planned for August 2015 to coincide with the SATS annual congress (also in Cape Town).

Figure 3: Dr. Coenie Koegelenberg, Chairman of the new IPSA

ITEM 4: The scientific committee for the 19th WCBIP/WCBE has begun building the scientific program for an exciting world congress in Florence, Italy from May 8-May 11, 2016. For the first time, EACCME credits will be offered. The President of the 19th World Congress, Dr. Stefano Gasparini and his team are also planning a culturally rich and stimulating social program. By the way, if you are a member of the board of regents, MARK YOUR CALENDARS- the WABIP BOR meeting in Florence will be held on Sunday, May 8, 2016.

Figure 4: Flyer of Florence World Congress

Research

Thoracic Ultrasound Can Diagnose Entrapped Lung Without Invasive Diagnostic Procedures

New research suggests that Motion mode (M-Mode) thoracic ultrasound can diagnose the entrapped (trapped) lung resulting from Malignant Pleural Effusion (MPE) (1).

MPE is closely associated with lung, breast and many other malignancies (2). Lung and breast cancers account for more than two thirds of all the MPEs. There are more than 150,000 new cases of MPE in the USA and more than 40,000 in the UK every year. MPE can be managed in many different ways depending upon the prognosis and the tumor type among other factors. However, whenever the diagnosis of trapped lung is established with MPE, the management options are reduced dramatically.

Trapped lung is defined as the inability of lung to expand despite fluid removal from the pleural space. It mostly happens due to a thickened and fibrosed visceral pleura resulting from pleural involvement with tumor, infections or inflammatory diseases. As a result there is vacuum generated around the lung after fluid removal (pneumothorax ex vacuo).

Generally the diagnosis of trapped lung is made after a diagnostic or a therapeutic drainage procedure. Often chest tubes are placed to drain the fluid and to perform pleurodesis. However once the trapped lung is discovered, therapeutic strategy changes since pleurodesis can't be achieved in these patients. This often leads to removal of the chest tubes and either an insertion of indwelling pleural catheters or application of surgical techniques such as decortication only if patients are healthy enough and carry a good prognosis, which is unusual.

The recent study under discussion from Dr. Salamonsen et al; (1) from Australia studied 81 patients with suspected malignant pleural effusions who underwent thoracic ultrasound using an echocardiogram machine. M-mode and Speckle–tracking images caused by cardiac impulse were captured from the atelectatic lobe during a breath hold. These images were compared with the gold standard of pleural elastance for the diagnosis of trapped lung. The study shows that the motion and strain resulting from the cardiac impulse on the atelectatic lung were significantly lower as measured by the M-mode and Speckle–tracking images compared to non-trapped lung. The sensitivities of these ultrasound techniques are better than the sensitivity of pleural elastance while specificities are quite comparable for diagnosing entrapped or trapped lung.

This modality offers a non-invasive, expeditious, and a reliable method of diagnosing trapped lung at the first encounter with the patients. Especially in this day and age when thoracic ultrasound is readily available in majority of the western institutions. Proper diagnosis in turn could stratify the management of these patients in an efficient and a judicious manner. This study also opens the door for further studies in non-malignant entrapped/trapped lung.

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WABIP ACADEMY- WEBCASTS

The WABIP has started a new education project recently: *THE WABIP ACADEMY.* The WABIP Academy will provide free online webcasts with new and hot topics that will interest pulmonologists and interventionalists.

Current webcast topic: **Tissue acquisition for biomarker directed therapy of NSCLC**

You can reach these webcasts by using this link: http://www.wabipacademy.com/webcast/

Links

www.bronchology.com	Home of the Journal of Bronchology
www.bronchoscopy.org	International educational website for bronchoscopy training with u-tube and facebook interfaces, numerous teachiing videos, and step by step testing and assess ment tools
www.aabronchology.org	American Association for Bronchology and I nterventional Pulmonology (AABIP)
www.eabip.org	European Association for Bronchology and Interventional Pulmonology
www.chestnet.org	Interventional Chest/Diagnostic Procedures (IC/DP) NetWork
www.thoracic.org	American Thoracic Society
www.ctsnet.org	The leading online resource of educational and scientific research information for cardiothoracic surgeons.
www.jrs.or.jp	The Japanese Respirology Society
sites.google.com/site/asendoscopiarespiratoria/	Asociación Sudamericana de Endoscopía Respiratoria

NEW 5 YEAR DATA

Established long-term effectiveness and safety

Newly published data confirm Bronchial Thermoplasty (BT), delivered by the Alair™ System, as a safe and minimally invasive procedure that provides a long-term reduction in asthma exacerbations for patients with severe asthma.

Fewer respiratory-related emergency room visits

- **84% reduction in emergency room visits** for respiratory symptoms at 1 year compared with sham-controlled patients, with reduction maintained out to 5 years[1,2]

Fewer exacerbations, with effectiveness maintained out to 5 years

- **32% decrease in severe asthma exacerbations** (requiring systemic corticosteroids) at 1 year compared with sham-controlled patients, with reduction maintained out to 5 years[1,2]
  - —The decrease in severe exacerbations over 5 years included a substantial reduction in the use of systemic corticosteroids associated with those exacerbations[2]
- No increase in hospitalizations, asthma symptoms, or respiratory adverse events over 5-year period[2]

View the 5-year clinical trial results at BT5years.com

Brief Statement of Relevant Indications for Use, Contraindications, Warnings, and Adverse Events: The Alair Bronchial Thermoplasty System is indicated for the treatment of severe persistent asthma in patients 18 years and older whose asthma is not well controlled with inhaled corticosteroids and long-acting beta-agonists. The Alair System is not for use in patients with an active implantable electronic device or known sensitivity to medications used in bronchoscopy. Previously treated airways of the lung should not be retreated with the Alair System. Patients should be stable and suitable to undergo bronchoscopy. The most common adverse event of BT is an expected transient increase in the frequency and worsening of respiratory-related symptoms. Rx only.

CAUTION: Law restricts this device to sale by or on the order of a physician. Indications, contraindications, precautions, and warnings can be found with product labeling.

NOW AVAILABLE from Boston Scientific
for the treatment of severe asthma in adults

Bronchial Thermoplasty™

References: 1. Castro M, et al, for the AIR2 Trial Study Group. *Am J Respir Crit Care Med.* 2010;181:116-124. **2.** Wechsler M, et al; for the AIR2 Trial Study Group. *J Allergy Clin Immunol.* 2013; 132:1295-1302.

Please join us in April, 2015, in Barcelona !